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Poetry.

PRIDE.

BY J. G. SAXE.

Of all the notable things on earth,
The queerest one is pride of birth
Among our "fierce democracie!"
A bridge across a hundred years,
Without a prop to save it from sheers,
Not even a couple of rotten peers;
A thing for laughter, fleers and jeers,
Is American aristocracy!

English and Irish, French and Spanish,
German, Italian, Dutch and Danish,
Crossing their veins until they vanish
In one conglomeration!
So subtle a tangle of blood, indeed,
No heraldry Harvey will ever succeed
In finding the circulation.

Depend upon it, my snobbish friend,
Your family thread you can't ascend,
Without good reason to apprehend
You may find it waxed at the other end
By some plebeian vocation!
Or worse than that, your boasted Line
May end in a loop of stronger twine
That plagued some worthy relation.

THE FARMER'S DAUGHTER.

She may not, in the mazy dance,
With jewelled maidens vie;
She may not smile on courtly swain
With soft, bewitching eye;
She cannot boast a form and mien
That lavish wealth has brought her;
But, ah, she has much fairer charms,
The Farmer's peerless daughter!

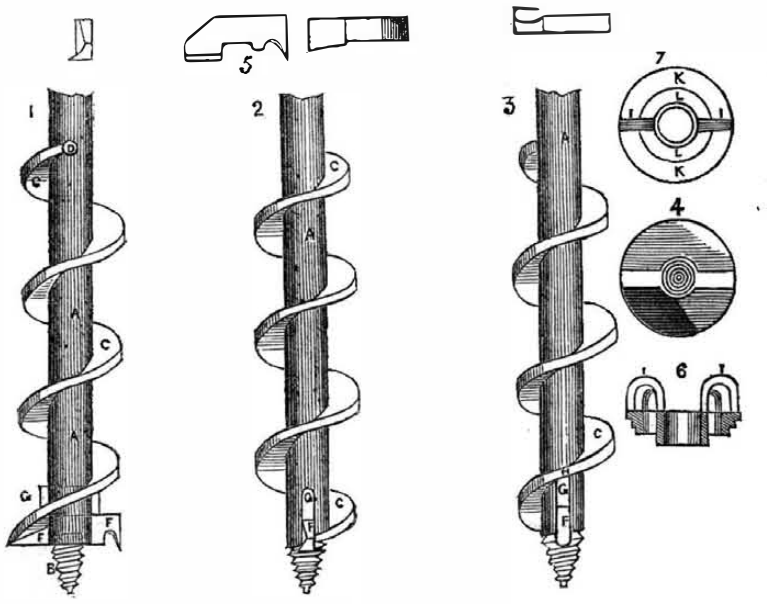
The rose and lilly on her cheek
Together love to dwell;
Her laughing blue eyes wreathe around
The heart a witching spell;
Her smile is bright as morning's glow
Upon the dewy plain,
And listening to her voice we dream
That Spring has come again.

The timid fawn is not more mild,
Nor yet more gay and free;
The lily's cup is not more pure
In all its purity;—
Of all the wild flowers in the wood,
Or by the crystal water,
There's none more pure or fair than she—
The Farmer's peerless daughter!

The haughty belle whom all adore,
On downy pillow lies—
While forth upon the dewy lawn
The merry maiden hies;
And, with the lark's uprising song,
Her own clear voice is heard—
Ye may not tell which sweetest sings,
The maiden or the bird.

Then tell me not of jewelled fair—
The brightest jewel yet
Is the heart where virtue dwells
And innocence is set!
The glow of health upon her cheek—
The grace no rule hath taught her—
The fairest wreath that beauty twines,
Is for the Farmer's daughter!

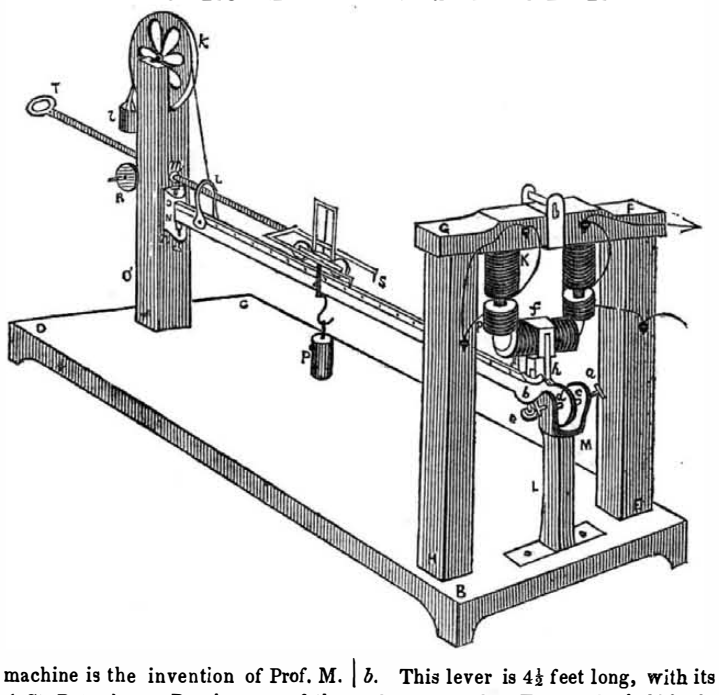
IMPROVED AUGUR.



This is the invention of Mr. William Ash, of Sheffield, England. Its object is to produce holes of various diameters by one instrument by having the cutting and guiding parts detached, so as to change them at pleasure.

Figures 1, 2, 3, represent the augur in three different positions. Fig. 4 shows its end. A, is the spindle. B, the conical screw. C, the worm fitted on the spindle. The upper end of the worm is made to bear against the stop D. F, is the cutter fitted into a mortice in the spindle, fastened by the wedge piece G. The cutter F, is shown above in four detached positions, fig. 5. The lower end of the worm bears against the back of the cutter, and the wedge G rests also in a small notch cut in the face of the worm, as seen in fig. 3. On taking out the wedge the cutter can be taken out and also the worm, when another worm or cutter of a different size may be attached to the spindle. In this way the cutter can be taken out and sharpened at pleasure. Instead of the worm C, the guide figures 6 and 7, are sometimes substituted. Fig. 6 is a vertical, and fig. 7 a horizontal section. This guide consists of a ring K K, having a slightly conical screw thread on the outside from which extend two wings I I, supporting a thimble L. Through this thimble, the spindle A passes, and the cutter being applied to bore the wood, the opening of the hole is only to be cut in the first place, then the ring of the guide is firmly screwed into that orifice, and in boring the cutter will then be directed by the spindle sliding through the thimble. By the worm the chips are carried up out of the hole. By the guide the chips will rise through the opening K and the thimble L. The worm appears to be by far the best guide.

ELECTRO MAGNETIC STEEL-YARD.



This machine is the invention of Prof. M. Jacobi of St. Petersburg, Russia, one of the greatest electricians of the age. A full account of it was first published by the Professor in the Bulletin of the St. Petersburg Academy.

A B C D, is the bottom board. E H, are two posts. F G, is a cross piece to support a horse shoe iron bar K, which is surrounded with copper wire. This bar must be firmly secured to the beam. L is an iron stem divided at the top to receive the steel screws *a* and *b*. *c d*, is the axis of the iron lever M N, which moves without much friction between the screws *a* *b*. This lever is 4½ feet long, with its upper edge tapered. Two and a half inches from the central point of this lever, it is made strong and is perforated perpendicularly to receive a strong pin which terminates above in a screw. Underneath this pin is a nut *e*, fastened below by a joint piece and above by a female screw so as to allow it to move around its axis. *f g*, is a strong piece of brass, in which is firmly fixed the anchor P, surrounded with copper wire. The piece of brass has a cleft in it in which are two bars *h* (one only seen) fastened to the lever. It is evident that when the bolt is turned on its axis, the brass piece and the anchor, may be raised or lowered perpendicularly, so that the poles of the horse shoe may be brought nearer or placed farther apart. The end of the lever supports a gimbal *i*, from which a cord passes over the pulley, which supports the weight *l*, counterpoising the weight to the post O. *m n*, is a shoulder piece with two adjusting screws to keep the lever within due bounds, and partly so far as the upper screw is concerned to check the motion of the lever. After it is counterpoised, the battery circuit is completed and the magnetic attraction takes place before the measuring begins. P is a running weight on the small tram wheel wagon, which may be moved backwards and forwards between the fork like termination of the toothed rod S T, in which the ratchet wheel R works. By means of a sliding bar (not visible in the sketch,) the latter may be used as a catch so that till then the toothed rod can be moved freely. The lever must be horizontal, laid out by a level. The distance from the fulcrum of the lever to the point where the weight is suspended, is four feet two inches—that is 20 times the distance from the fulcrum to the axis of the pin. The object of the apparatus is to perform exact experiments on the lifting power of electro magnets.

RAILROAD NEWS.

New York and Erie Railroad.

This great road commences on the Hudson river, about twenty five miles above this city. From Piermont it proceeds to Dunkirk on Lake Erie. It is constructed on the broad guage and 200 miles of it is now finished, viz. to Binghampton. The whole length when completed will be 475 miles. The original estimate of the cost of the New York and Erie Railroad was $7,000,000, including $1,500,000 for machinery &c. 5 years ago the sum of $4,746,950 had been expended, and apparently very little progress made. It was only last winter that the first locomotive and train of cars passed from Piermont to Binghampton; at which point the expense had reached the sum of $9,802,433, including however, some heavy work executed west of Binghampton. By next December it is calculated that trains will reach Hornellsville, 77 miles further west,—that is, 301 miles from this city, at which time it is supposed the work will have cost $13,000,000; when an additional $3,000,000; making in all $16,000,000, will be required to carry it to the lake shore.

It is a splendid road and although constructed at a great expense yet it is calculated that when the road is completed it will do an annual business equal to $3,000,000, at an expense of $1,500,000, leaving a net revenue of the last named amount; which, after payment of 7 per cent. interests on loan and floating debt, amounting to $465,000, will allow of 7 per cent. dividends, (amounting to $630,000) on the $9,000,000 of stock, with a surplus of $345,000 as a sinking fund, applicable to the redemption of bonds, of which there may be about $7,000,000.

The citizens of McMinniville, Tenn. have taken steps to connect that place by a branch with the Chattanooga Railroad. The estimated cost of the work is $180,000, of which $50,000 was subscribed up to the 7th inst. and the list is rapidly increasing.

The negociation of the Bonds of the Columbus and Xenia, Ohio, Railroad, has just been completed by Messrs. Winslow, Lainer & Co. The entire amount is $300,000, secured by a mortgage on the road, &c. to John J. Palmer, trustee, at 7 per cent interest, payable in ten years and convertible into stock at the pleasure of the holders.

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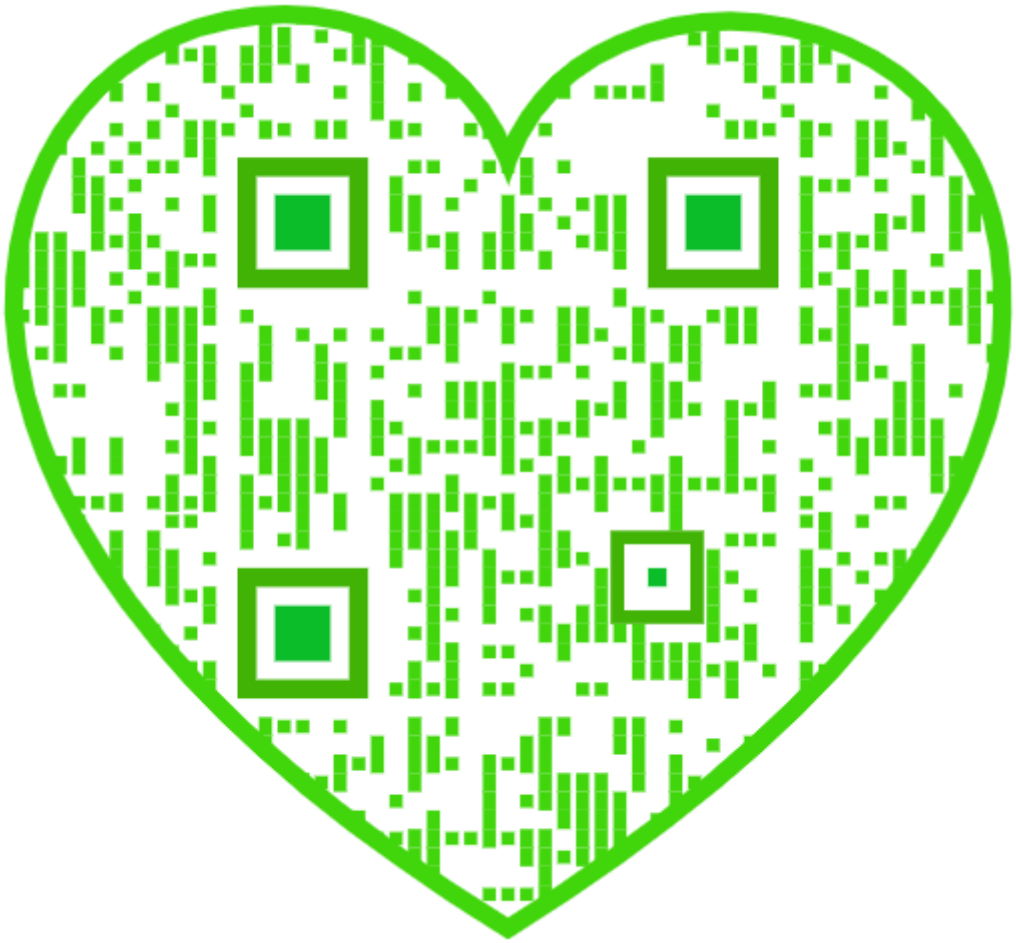

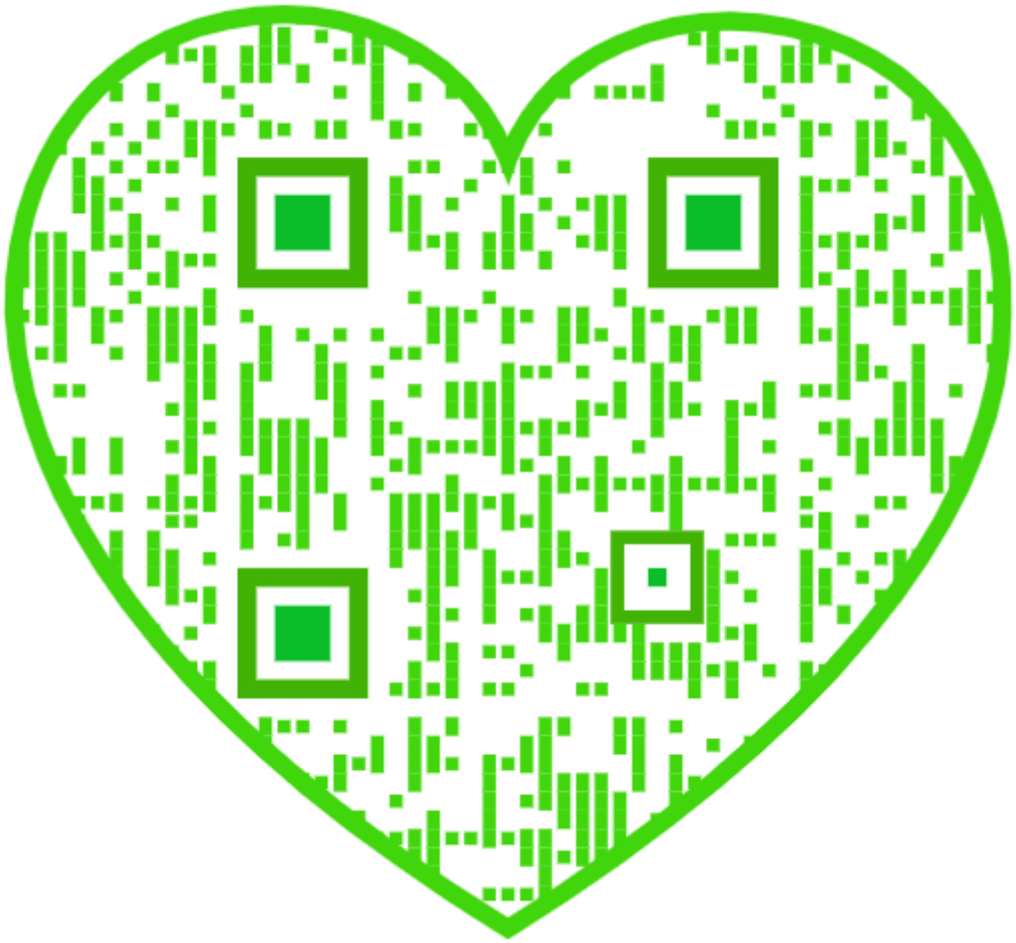

Subscribers, Inventors, and the Public.

It is a source of satisfaction to us, as publishers of the only weekly journal in this country, which is devoted expressly to the interest of Mechanics, to find that our efforts are so highly appreciated by them. This feeling is more than usually manifested by the promptness with which they have re-subscribed for a continuance of the present volume; and we would gladly give place in our columns to the gratuitous testimonials that have generally accompanied them—but the want of room forbids it. To old and new subscribers we tender our grateful acknowledgements for their generous aid, and we re-assure them that no pains or expense shall be spared on our part to render the Scientific American worthy its name, and the profession in which we labor. From its commencement up to the present time, we have witnessed with unbounded satistaction the results of human ingenuity and skill and however feeble the effort or unprofitable some of the results may be, to the originator, the spirit is worthy of commendation and encouragement. We not unfrequently meet with individuals who from ignorance, and ill-breeding ridicule the zeal, efforts and productions of *honest* but poor inventors, they should be aware of this fact, that the poorest invention upon record doubtless cost its originator more hours of deep reflection, than they employ upon one subject in the whole course of their existence, and hence the necessity of exercising the charity due the prompting of genius which seeks the encouragements rather than the buffetings of the world. A truly inventive mind is never at rest, but is continually gathering new thoughts and devising new plans whereby they can be brought to subserve useful purposes. The history of Archimedes affords a beautiful illustration of the power and longings of the mechanical mind We find that after having exhausted all the scientific knowledge that Syracuse his native city afforded him, he repaired to other countries to farther adorn a genius that lives in the remembrance of minds capable of appreciating his motives. Of his pecuniary condition little is known, but many of the most eminent mechanics known in history were compelled to struggle against the most overwhelming adversities of fortune, and although regarded (more in ancient than modern times) as wild enthusiasts, yet in despite of every obstacle their achievments have shed lustre upon their name and country. Whether Roger Sherman ever produced an invention or not, it is sufficient to know that his early advantages were limited to such an extent, that he toiled 6 years as an honest, and poor mechanic, but by perseverance—wholy unaided he accomplished results, familiar to every school boy. It is our highest object to stimulate and encourage mechanics to bring out the results of their genius, and to open a medium through which they can avail themselves of the general improvements going on in the industrial arts. We recognize no moral difference between the rich and the poor mechanic, the one is as equally entitled to the protection of his rights as the other, and we shall never depart from this course, so far as our influence can be exerted to sustain it.

Alabama Coal.

The British mail steamers stopping at Mobile have used the Alabama coal, and find it equal in every respect to the Welsh coal. The Alabamians talk of forming associations for mining and transporting it down the river, for the supply of national mail and merchant steamers plying on the Gulf.

Tennessee Cotton Manufacture.

The entire stock ($30,000) in a new cotton manufacturing establishment proposed to be erected near McMinnville, (Tennessee,) is subscribed for, and measures are to be taken for procuring all the requisite materials for erecting the necessary buildings. It is the intention to run 2000 spindles and 60 looms.

New Application of India Rubber.

The Liverpool Albion describes an ingenious application of caoutchouc, or prepared India rubber, and which shows the expanding power of the preparation. It has been made and patented by Mr. Sangster, of Regent Street, London, for a very useful purpose. It is to supersede springs of metal for the expansion of parasols, and for compressing the ribs of them, and of similar articles. The India rubber is prepared by a chemical process. or by some process of science made into the shape of a small pipe or hose; it is also vulcanized. By these means the elastic power and the tenacity of the gum are increased to a perfectly marvellous degree. A small ring of the material so prepared, less in width than the eighth of an inch, is cut from the pipe, and placed around the top of the ribs. When the ribs are expanded, the elastic power of the ring enables it to be stretched so as to suit the exigency, while its leverage and power of contraction are so great, that directly the power is removed by which the expansion is secured, it forces the ribs together, and keeps them firmly compressed.

This prepared india rubber about which our contemporary across the water makes such a fuss about, and which is so very *curious* to some of our papers here, is nothing more nor less that a ring of Goodyear's American vulcanized India rubber, applied to an umbrella. Wonderful *new* invention truly.

Electro-Magnetic Clock.

Ten thousand dollars have been appropriated by Congress to Professor Locke, Cincinnati, to pay him for the use of his late invention by the government of the United States, (not, however, to make it free to individuals,) and for a Clock upon his plan, to be erected by him at the National Observatory, at Washington. Professor Locke is now on his way to the Atlantic cities, to engage such artisans as may have excelled in their profession to execute the clock for the National Observatory, having determined that it shall be a specimen of American skill and ingenuity.

The Gold Mines of Russia.

The constantly increasing productiveness of these mines renders them a matter of considerable interest. They were first worked in 1819, their existence having been previously proved by the presence of considerable quantities of gold in the sand of the Ural rivers; in that year upwards of 1600 pounds weight of metal was procured. This quantity has been steadily increasing during every succeeding year, and in 1846 amounted to more than 68,880 lbs. weight. The total weight obtained since 1819 is 537,400 lbs. This amount includes the produce of certain Siberian mines as well as those of the Ural mountains, and the quantity obtained by washing the sand of the Ural rivers.

By all the accounts which have as yet been received from California, the gold of the Ural mountains is as dust in the balance.

A Strange Animal.

Col. Fremont has recently dispatched to Corpus Christi an extraordinury animal which his party succeeded in capturing, after a three days' chase, in the neighborhood of the River Gila. A letter received from one of Col. Fremont's party by a merchant in St. Louis, describes it as an animal resembling a horse in every particular, except that it is completely covered with a close curly wool resembling camel's hair in color and the fineness of its texture. It has no mane, and its tail is like an elephant's. The animal possesses wonderful agility, leaping over obstructions ten feet high with all ease.

[This must be one of the one third horse, one third sheep and one third elephant breed —none of the alligator it seems.

Large Casting.

The second bed plate for the engine of the steamship Ohio, was cast on Wednesday last week at Secor & Co.'s Iron Works, foot of 9th st. this city. Four furnaces were charged with 43 tons of metal, which were transferred to the mould by 120 workmen, by means of cranes and buckets. The weight of the casting is about 35 tons. The engines of the Ohio will be 90 inches diameter and 8 feet stroke.

The Epidemic in Worcester Co. Mass.

It has been already stated than an alarming disease existed at Milbury and Sutton, called by some the spotted fever and by others the cholera. A post mortem examination of one who recently died shows (according to a communication in the Worcester Spy,) that the disease is what is called by scientific men cerebao-spinal meningitis, or in common language, inflammation [of one or more,] of the membranes investing the brain and spinal marrow. Its likeness to the spotted fever or the cholera is only its likeness to all disease which makes a sudden and profound impression upon the nervous system. The inflamation in the case examined had gone to suppuration, the forming of prurient matter. A milder form would constitute what is called dropsy of the brain. A similar epidemic prevailed to a frightful extent among the soldiers of the French army in 1839.

Explosion of a Great Gasometer.

The inhabitants of Edinburg were started a short time ago by a vibration which shook many of the houses in their foundations and threw down several people in one of the streets. A gas holder of the Edinburg Gas Company, by some means caught fire and continued to blaze with great fury until gradually as the gas was consumed, the gas-holder immersed in the tank amongst the water beneath, and the conflagration was ultimately extinguished by means of wet blankets and coarse sacking being spread over its scattered remains. There was a mystery about the matter, as the gasometer was completely isolated, surrounded by a wall, and no fire or combustable allowed inside. There were in the gasholder at the time nearly 3,000,000 cubic feet of gas, the greater portion of which would of course be consumed. The total damage was estimated at about $2,000.

How to Extract Teeth.

The Wheeling Times gives the following account of tooth raising which appears to be both novel and effective.

"An individual of this town, while desperate under the toothache, resolved on the summary method of blowing up his refractory grinder. It was an immense masticator—having an excavation equal, in the extent, to the cavity of a gun-barrel. With the assistance of his helpmate, he dried out the cavity—filled it with gunpowder—pounded in a wad of cotton, and with a red hot knitting-needle, set fire to the mine, when a most tremendous explosion took place. The jaw bone was rent in twain; the offending tooth demolished, and with it three others, against which there was no cause of complaint. The poor man found himself prostrated on the floor, minus four teeth, besides having his face much burnt."

Camphine.

The Maine Farmer tells of a chap in Gardiner, who took a gill of camphene in mistake for gin, but whose life was saved by a most ingenious process. After the stomach pump and all common means of restoration had been tried in vain, the grocer's clerk simply run a wick down the patient's throat, touched a blaze to it and burned out the camphine! Instant restoration was the consequence.

Lubricating Material for Boots.

Take seneca oil any quantity, and dissolve as much gum elastic in it as it will take, warm it and apply it to your boots and shoes. It will make the leather impervious to water and keep it very soft and pliable. I have tried it and found it to answer well. The oil will dissolve the gum very slowly. Fish oil will do as well.

Hurricane in Kentucky.

A great hurricane occurred last week in Kentucky, passing over the beautiful villages of Shelbyville and Beardstown, and over the adjacent counties, prostrating and destroying nearly everything in its course, tearing up trees, blowing down dwellings and spreading general destruction in its course. The damage to property is said to have been terrible, and many lives were lost.

The Ballard Vale, (Mass.) Machine Shop, with all the tools, buildings, lands, &c. which cost, within two years, $150,000, has been sold at auction for the sum of $68,650. The purchaser was C. L. Hayward, Esq. of Boston.

Vermont Sugar.

The Green Mountain Freeman says, that "the amount of maple sugar made annually in Vermont, according to the best estimates we can obtain, is about five millions of pounds.—Our present population is not far from three hundred thousand. This will give a fraction over 16 pounds to each inhabitant of the State, or about 100 pounds to every family of six, and to all other families a proportional amount. This cannot be more than half the quantity which is consumed by the inhabitants. With our noble maple forests, the finest, perhaps in the world, and with the inducement to furnish themselves and others with a more sweet, pure, exquisite in flavor than can be extracted from any other substance on earth, will not our farmers this season try to swell the amount heretofore made? Let those, whose tastes so decide, use other sugars if they will; you can, after supplying yourselves, send the surplus, by our coming railroad, to the cities, where, if it is well made, it will always command handsome prices."

Copper and Silver in Michigan.

The Adrian Watchtower says that the Minesota Copper Mining Company have found at a distance of 30 feet below the surface of the ground, a rich lode of copper ore, seven feet wide, with a vein four inches thick, containing considerable silver, and on one side of this, a vein of pure copper, nine inches thick. They have followed this twelve feet in depth, and 10 feet in length, and find neither end or bottom. Another shaft sunk at a distance of 160 feet, strikes the same vein of pure copper. The stock of this company is now considered worth 300 per cent premium.

The Sea Serpent seen Again.

Captain Adams, of the schooner Lucy and Nancy, from New York to Jacksonville, reports in a Florida paper having seen the Sea Serpent on Sunday, 18th of February, about 9 o'clock, when off the south point of Cumberland I., about 12 miles from the St. John's bar. It was seen by the Capt., crew, and passengers. The description they give of it accords with that given by the officers of the British frigate Dædalus, and reported some time since in the English papers.

Railroad Travel from Albany West.

The constant and vexatious stoppages and delays in changing cars on the various railroads between Albany and Buffalo having given rise to innumerable complaints, a through train will be put on this spring, which will only stop at Schenectady, Utica, Syracuse, Auburn, Geneva, Canandaigua, Rochester and Attica. An accommodation through train will follow to pick up way passengers. This is in effect, a step towards the consolidation of these various railroads.

Railroad in Missouri.

The bill appropriating ten thousand dollars for the survey of the Missouri and Mississippi Railroad, extending from Lexington on the Missouri river to Ohio city on the Mississippi river, at its confluence with the Ohio, has become a law. This may be considered the commencement of a prudent system of internal improvements by the State of Missouri, and as that State is out of debt, it can well develope its vast mineral and agricultural wealth.

California Prices by the last accounts were receding for some articles, though others kept up. A mercantile letter of the 26th December, reports the last sales of flour at 12 a $14 instead of $25, as before. Liquors of all kinds kept up; ale and porter have advanced, and sold at auction at $18 per doz. Lumber has advanced, from 100 to $125 per M., and will go higher. American vessels are much wanted to coast, and freights are high. Seamen's wages are 50 a $60 per month. At least sixteen vessels were known to be on their way from Chili, loaded mostly with breadstuffs and provisions.

At the February term of the court in Montgomery county, Pa., the Judge decided that a turnpike company could not recover toll of a traveller, by suit, upon his refusal to pay after he had been permitted to pass through a gate—that the only compulsory power invested in these companies is the privilege of closing the gate upon those refusing to pay.

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For the Scientific American.

The Honey Bee.

Where can we find so great a source of profit, without money and without price, as the little honey bee affords ; yet we do not avail ourselves of her labors to the hundredth part of the extent that we might. And what is equally strange, no man in this country has ever thrown a ray of light, comparatively speaking, on this subject through the press.—It is *terra incognita* to all, save the traditionary whims and notions in regard to the management of this insect, that have passed down from the days of Aristotle and Pliny (who were apiarians in their day) to the present time.

I am now making an effort to dispel the clouds of moral darkness that hover over the proper management of bees, and arouse the dormant spirit that exists on this subject generally, among those who are the most deeply interested in the advancement of apiarian science. This subject is so vast in all its ramifications that one can barely introduce it in an article like this ; yet I will briefly refer to a few points of interest, in the eccnomy and habits of this insect.

The relation of the *queen* to the family and facts pertaining to her, are, perhaps, the most wonderful of any branch of the subject. It is probably pretty well known, that every association of bees is composed of *one* queen, from 5000 to 10,000 *workers*, generally ; and some 500 *drones*. The queen is the governess of the whole family, and is the alpha and omega—the prime mover—the all in all of every community. She produces all the eggs amounting to 30,000 annually in some cases. The most singular feature pertaining to royalty, is the manner in which queens are produced. The same egg that produces a worker, will also produce a queen, larger and differing entirely in her organic structure from a worker. There are only two kinds of eggs laid by the queen, viz. those that produce workers and those that produce drones. In the spring about the beginning of May, the first measures are taken to produce young queens to go off with swarms. The first thing done, is to construct several *royal cells*, which are always made to hang vertically ; whereas, all other cells are placed horizontally, or nearly so.—The shape of a royal cell and its size is nearer to that of a peanut, with one end open, and the nut extracted, than any thing else that it can be likened to. When these cells are partly constructed, the egg is laid therein, and afterwards the cell is completed. As soon as the egg bursts its integument, and the *larva* or grub appears, the workers provide a different food for it, from that fed to other larvæ, and which has been termed 'royal jelly.' The grub is fed with this jelly for the space of *four* days, when the cell is sealed over by the workers, and the grub then enters the *pupa* or *chrysalis* state, in which it remains about *twelve* days, and then emerges from its prison a perfect queen ! This is no hypothesis, or visionary theory ; but *truth truly demonstrated*. Now, the same egg, if placed in a worker cell, would have produced only a worker. As proof positive of this allegation, I will state what I have many times done with my own hands, and beheld the result with my own eyes. I have taken a piece of comb that contained nothing but *worker-eggs*, from hives where it was out of the question that there could be any want, or probability of raising queens, and I have placed such piece of comb in an empty hive —then forced bees enough into said hive to make a respectable family, every one of which were *workers*, and the workers at once commenced building a few royal cells (they build several to be sure of raising one queen,) and placed the worker eggs therein, and at the end of *sixteen* days I have witnessed *perfect queens* issue therefrom. This fact I have tested a great many times in the formation of *artificial* swarms, and it is upon this basis, that this valuable discovery, the art of producing swarms at pleasure, rests. T. B. Miner.

We noticed Mr. Miner's Manual on the Bee, last week. Full details of the system are found therein.

Great Britain produces annually 31,500,000 tons of coal ; Belgium, 4,960,077 ; United States, 4,400,000 ; Prussia, 3,500,000 aud Austria, 700,000.

The Photographometer.

This is an instrument invented by Mr. A. Claudet, of Paris, for indicating to the Photographer, the intensity of the chemical rays and the same time the sensitiveness of his preparation, a full description of which was communicated by the inventor to the Paris Academy of Science.

The apparatus is very simple, and serves equally for processes on paper or on metallic plates. It indicates the intensity of the chemical rays at all moments of the day during atmospheric variations, and at the instant we may wish to operate. It serves also to compare the degree of sensitiveness of the different photographic preparations.

For an instrument of this kind, it is important in the first place to have a motion always uniform, without complicated or expansive mechanism. This is obtained by a means founded upon the principle of the fall of bodies sliding down an inclined plane. The sensitive surface is exposed to the light by the rapid and uniform passage of a metal plate having openings of different lengths which follow a geometric progression. It is evident that the exposure to light will be the same for each experiment, because the plate furnished with the proportional openings falls always with the same rapidity, the height of the fall being constant, and the angle of the inclined plane the same. Each opening of this moveable plate allows the light to pass during the same space of time, and the effect upon the sensitive surface indicates exactly the intensity of the chemical rays. The rapidity of the fall may be augmented or diminished by altering the inclination of the plane by means of a graduated arc, furnished with a screw, by which it may be fixed at any angle. The same result may be obtained by modifying the height of the fall or the the weight of the moveable plate. The photogonic surface, whether it be the Daguerreotype plate, the Talbotype paper, or any other preparation sensitive to light, is placed near the bottom of the inclined plane. It is covered by a thin plate of metal pierced with circular holes, which correspond to the openings of the moveable plate at the moment of the passage of the latter, during which the sensitive surface receives the light wherever the circular holes leave it exposed.

By placing beneath each series of holes a different sensitive surface,—each of these surfaces will, during the fall of the moveable plate, receive the same proportion of the same light, and thus their different degrees of sensitiveness may be compared. In this manner we learn the comparative sensitiveness of different preparations of the iodide, of the bromo-iodide and chloro-iodide of silver, and of the various photogenic papers ; for it is indispensable, in making an exact comparison, to operate with the same light, and during strictly the same space of time, as it is known that the light varies from one minute to another.

M. Claudet announces a very extraordinary fact which this apparatus has furnished him with. He does not give it as the result of a calculation mathematically correct ; but he cannot be far from the truth in stating, that the pure light of the sun modifies the bromo-iodized silver plate, communicating to it an affinity for mercurial vapor which produces, the white image in the Daguerreotype, in a space of time which cannot be much more than the thousandth part of a second. M. Claudet made the experiment in the following manner :—He let the light of the sun fall upon the plate through an opening of a milimetre, whilst this opening passed over a space of 350 millimetres in one quarter of a second, as near as he could judge ; this light could not therefore have acted on the plate during much more than the 1-1000th part of a second, nevertheless an inconceivably short space of time sufficed to produce a decided effect.

M. Claudet suggests the following applications of his photographometer—to ascertain : What is the effect of the compound light, and that of the different separated rays of the solar spectrum ? How much photogenic light is lost by reflection from parallel mirrors, prisms, and other substances, and by refraction through lenses ? The proportion of photogenic rays in the lights obtained from various sources, including that produced by electricity ? If the photogenic light varies with the height of the atmosphere and with the changes of temperature ? If it is affected by the electrical state of the atmosphere ? In fine, what is the proportion of the photogenic rays at each hour of the day, and at different points in space at a given moment ?

The Charm of Cleanliness.

A white-yellow shirt on a man, said William Cobbett, speaks at once the character of his wife ; and be you assured, that she will not take with your dress, pains which she never takes with her own. Then the manner of putting on the dress, is no bad foundation for judging,—if it be careless, slovenly or if it do not fit proper. No matter its mean quality ; mean as it may be, it may be neatly and trimly put on ; and if it be not, take care of yourself, for, as you will find to your cost, a sloven in one thing is a sloven in all things. The country people judge greatly from the state of covering of the ankles ; and if it be not clean and tight, they conclude that all out of sight is not as it ought to be. Look at the shoes ; if they be trodden on one side loose on the foot, or run down at the heel, it is a very bad sign ; and, as to slipshod, though at coming down in the morning, and even before daylight, make up your mind to a rope, rather than live with a slipshod wife. Oh ! how much women lose by inattention to these matters ? Men, in general, say nothing about it to their wives ; but they think about it ; they envy their luckier neighbors ; and in numerous cases, consequences the most serious arise from this apparently trifling cause. Beauty is valuable ; it is one of the ties, and a strong tie too ; that, however, cannot last to an old age ; but the charm of cleanliness never ends but with life itself.

A Classical Rebuke.

One evening a short time since Professor Wines advertised a gratuitous lecture at Newark, on the Theory of the Government. At the hour of commencement, the audience being very small, the Professor administered the following neat, classical, and pungent rebuke.

" Plato when delivering lectures in Athens, sometimes had Aristotle for his only hearer ; on which occasion he was accustomed to proceed with his lecture as usual, remarking that when he had Aristotle, for a hearer, he had the better half of Athens. On the same principle, I may congratulate myself on my audience this evening."

It is a fact, that many of the best standard productions, were delivered to almost empty halls. When Handel was alive many of his pieces were performed before very thin audiences. On such occasions the great musician used good humoredly to observe " oh never mind, the music will sound all the better."

The Folding of Newspapers.

The rapidity with which newspapers are folded by lads in the large establishments of our cities, is a matter of wonder to those not initiated in the mysteries of newspaper life.—This astonishing speed is attained, by a spirit of competition, and the ambition to excel among the boys.

As a specimen of the speed of these youthful folders, the Boston Journal mentions the fact that a lad employed in that office, folds papers at the rate of thirty-five per minute with three folds ; twenty-nine per minute with four folds, and twenty-six per minute with five folds. He was able to keep pace with the press which worked off from 1000 to 1200 papers per hour.

American Oranges.

The Mobile Herald says that since the destructive hurricane in Cuba a few years since, the Mobile fruit market had been supplied chiefly with Creole oranges raised in that neighborhood, Pascagoola and on the " coast" near New Orleans. These oranges are generally larger than those raised in the neighborhood of Havana, and much superior in flavor. The Herald contends that a number of locations might be selected on the bay and neighboring islands, where the orange would thrive admirable and scarcely ever be injured by frost. It instances the case of a person who realizes from $800 to 1000 annually from about thirty orange trees cultivated in a garden some miles south of that city. The fruit is said to be delicious and of most exquisite flavor.

Winter in Spitzbergen.

The single night of this dreadful country begins about the 30th of October, the sun then sets, and never appears till about the 10th of February. A glimmering indeed continues some weeks after the setting of the sun ; then succeed clouds and thick darkness, broken by the light of the moon, which is as luminous as in England, and during this long night shines with unfading lustre. The cold strengthens with the year, and the sun is ushered in with an unusual severity of frost. By the middle of March the cheerful light grows strong, Arctic foxes leave their holes, and the sea-fowl resort in great numbers to their breeding places. The sun sets no more after the 14th of May ; the distinction of day and night is then lost. In the height of summer the sun has heat enough to melt the tar on the decks of ships ; but from August its power declines, it sets fast. After the middle of September day is hardly distinguishable, and by the end of October takes a long farewell to this country ; the earth becomes frozen, and winter reigns triumphant.

Advice in Poultry Keeping.

A correspondent of the Agricultural Gazette says that it depends upon the following plan for the successful rearing and keeping of poultry.

1. To have two breeds—a few to hatch and rear the chickens, and twice the number of everlasting layers, as eggs are more profitable than chickens ; 2. To get a hatch as early as possible in spring, and to keep them well—these never cast their feathers like the old birds, and if they begin to lay in autumn, lay more or less all winter ; 3. Never to keep old fowls, (none but favorite fowls ought to be kept more than two years ;) old hens lay larger eggs than pullets, but not nearly so many ; 4. To give them the best barley, and as much as they could pick up once a day in summer, and twice in the winter ; they are not only more profitable, well kept, but the eggs are better. The two best breeds are the spotted Dorkings for sitting, and the Pheasant breed for laying.

Population of the United States.

From the report of 1848, submitted to Congress by the Commissioner of the Patent Office, it appears that the present population of the United States is estimated at 21,686,000. The number allotted to each State is as follows : Maine, 615,000 ; New Hampshire, 308,000 ; Massachusetts, 875,000 ; Rhode Island, 135,000 ; Connecticut, 340,000 ; New York 2,880,000 ; Vermont, 310,000 ; New Jersey, 425,000 ; Pennsylvania, 2,220,000 ; Delaware, 85,000 ; Maryland, 510,000 ; Virginia, 1,295,000 ; North Carolina, 780,000 ; South Carolina, 620,000 ; Georgia, 825,000 ; Alabame, 716,000 ; Mississippi, 670,000 ; Ohio, 1,980,000 ; Louisiana, 490,000 ; Tennessee, 980,000 ; Kentucky, 890,000 ; Indiana, 1,000,000 ; Illinois, 800,000 ; Missouri, 589,000 ; Arkansas, 200,000 ; Iowa, 150,000 ; Michigan, 420,000 : Wisconsin, 250,000 ; Florida, 80,000 ; Texas, 150,000 ; District of Columbia, 48,000 ; Oregon, 50,000.

Good Tools.

It is a bad sign to see a mechanic sawing away with a bad saw, taking two hours to saw a plank that could be cut up in one, by simply spending twenty minutes in sharpening his tool. It is a bad sign to see a broken window mended with an old hat ; so it is equally as bad a sign to see a mechanic hewing away with a broad axe sharpened with a rasp.

It is just about as pleasant to be shaved with a file, as to plane a board with a notched planing chisel. Good tools neatly arranged, are evidences of skill, wisdom and taste.

A Fly's Speed.

By fair comparison of sizes, what is the swiftness of a race-horse clearing his mile a minute to the speed of the fly cutting through her third of the same distance in the same time ? And what the speed of our steaming giants, the grand puffers of the age, compared with the swiftness of our tiny buzzers, of whom a monster train, scenting their game afar, may even follow patridges and pheasants on the wings of steam in their flight as friendly offerings ?

The navigation of the Hudson is now fairly open and the regular steamboats in full play.

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New Inventions.

New Screw Wrench and Hammer.

Mr. Geo. W. Lee, of McWilliamstown, Pa. has invented a new combination of a screw wrench, hammer and driver. The hammer is permanent and does not form part of the jaw, but is as it were, the butt of the handle. The handle is divided through the middle, the upper part forming the jaws, which are opened and closed by set screws. The driver is made to fit into a groove in the jaw, and when not needed, it is taken out and placed securely in the lower slit between the jaws. It is a good wrench and hammer, and performs the same office as Mr. Lewis's, of Worcester, Mass.—No person would have supposed that two tools to do the same work, could be constructed so entirely different, and both good. This is the age of improvement—and good tools are most requisite simple machines, that, beneficially for the community, can exercise the genius of our inventors. Measures have been taken to secure a patent.

Improvement in Steam Engines.

The Boston Times says that a new engine built by Messrs. Corliss & Nightingale, of Providence, R. I. embraces improvements by Mr. Corliss, by which the firmness and durability of the machine is increased, and the amount of fuel greatly reduced. All steam flouring mills used heretofore, we understand, have been subject to the difficulty of an unsteady motion, which renders them almost worthless for flouring purposes. But the engine here used, having had a complete and careful trial, fully overcomes this difficulty, and produces a motion entirely perfect. It is the first that has ever been able to accomplish this thing in a flouring mill."

There is surely some mistake in the above. There are many steam flouring mills in this State that are *anything* but *worthless* for *flouring purposes.* Our engineers will certainly be surprised to hear that no engine heretofore built has been able to run with steadiness.

New Grain Sower and Planter.

Mr. P. Seymour, of East Bloomfield, N. Y. has invented a machine for drilling land and for sowing corn and other seeds in drills. This machine drills and plants or sows quite a number of drills at once. The grain is conveyed down through tubes through the drill teeth which are hollow. The seed or grain is kept in a seed box above, which communicates with the drill tubes and is allowed to pass down and be shut off by a plate that covers the conduits of the grain, the said plate, having a reciprocating motion imparted to it as the machine is moved forward, so as to shut off and open the grain passages and let down the seed into the drills. The drill teeth can all be lifted up from the ground again by a windlass and lever, and as the body of the machine is like a wagon, moving on wheels, it forms a very convenient and excellent apparatus for the intended purpose especially as the drill is now held to be far superior to other modes of planting. Measures have been taken to secure a patent.

A New Gold Washer.

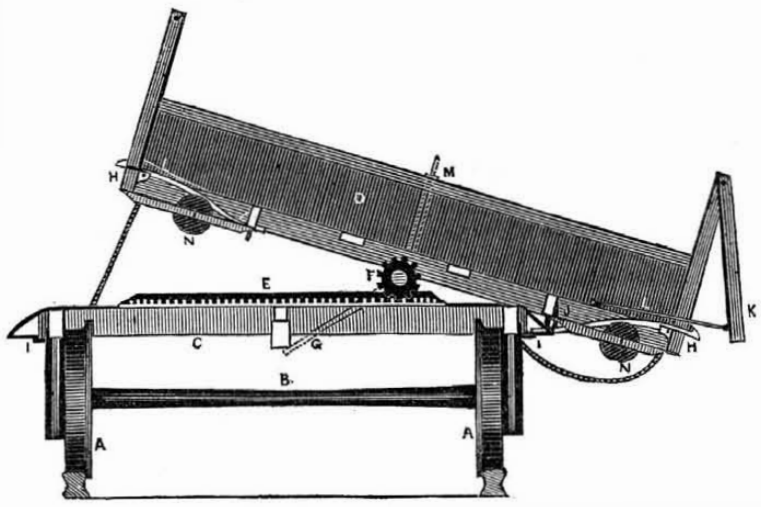
There have been quite a number of gold washers brought before the public since the discovery of California gold. We have seen not a few of them—some very good and others totally worthless. We have examined one invented by Mr. W. H. Danforth of Salem, Mass. (an engraving of which we will try and publish in a few weeks,) which appears to possess many excellent qualities. It provides for the scooping of deposits from the golden streams, and the lifting of the water by very suitable pumps, and washing the deposits upon a corrugated apron, which is generally esteemed the best mode of washing.

Gun Cotton as a Locomotive Power.

A late English paper announces that experiments had been made to test the value of gun cotton as a propelling power, and with considerable success. It appears that this explosive material, when twisted or matted burns slowly as wished, depending on the the tightness of the twist, or the extent of compression. Thus consumed, the product is made to pass into a vulcanized globe, 1½ inch thick, which expands considerable, and thence acting on pistons, drives the wheel of a small phaeton or a Bath chair.

It will never set the Hudson River on fire.

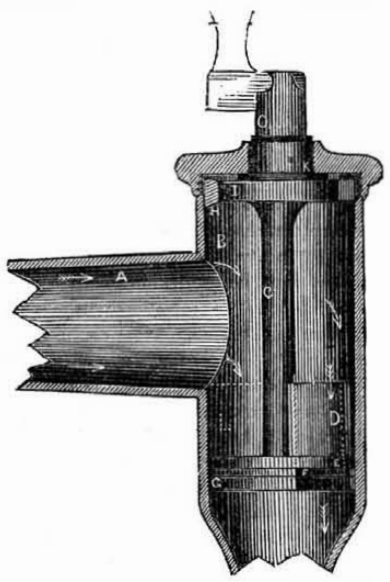
NETTLETON AND BARTLETT'S DUMPING CAR.



This is a Railroad Dumping Car, recently secured by patent to Messrs. Nettleton & Bartlett, Car Manufacturers, Springfield Mass. This engraving is a transverse section and it will at once be understood, as it exhibits clearly the principle of its construction and operation.

A A, are the wheels represented on the rails of the track. B, is the axle. C, is the end timber of the truck. E, is an iron rack bolted to the timber C. It has a flange on the outside and the rack is only seen inside. D, is the wagon. This wagon has a longitudinal axle running from end to end, firmly secured to the bottom or the wagon, and allowed to work in proper bearings. F, is a strong pinion on the end of the axle, and E a rack on on the truck. The pinion F, meshes into the rack and on one end of the axle is a crank lever G, seen by the section lines on the other side, which operates the pinion F, and moves the wagon to either side of the track to dump its load. N N, are two friction pulleys secured on the under side of the wagon, and on the central cross sleeper of the truck, is a rail I, which runs along and projects at an inclination over the side of the truck, so that it will be observed that every thing is planned to operate the loaded wagon with the least expense of power. For greater security, the wagon is attached to the truck by chains that allow it to go to the tilting point and no further. On the bottom of the wagon are lever catches H H, which catch into vertical latches on the doors while the wagon is receiving its load or moving on the track, but when the wagon is sliding over the incline rail at the side, the inside end of the lever catch is thrown out by cams projecting from the truck, and the door K is thrown open as represented above. L L, are two arms attached to the doors, not essential to its general operation, but are convenient. M, is a lever catch on the end of the wagon to retain the lever G, and keep the pinion F immovable on the rack. This car is intended for coal, brick or any other freight carried in open cars. It is far superior to the kind heretofore in use, called the arc or rocker car which received its tonage wholly upon two points of the arc, which is attached to the body and suspended upon side timbers attached to the trucks. The arc requires to be of so large a radius that the body must necessarily be elevated to an unsafe height, and by having its tonage on the two points only, it has to be elevated upon as clumsy a principle as the lifting of a table by putting the hands under the bottom of the legs. The rocker car when in motion has a bad osciallating action, which has been often attended with accidents to those who worked on them, indeed so many casualties have resulted from their faulty operation that they are usually called by honest Irishmen, "Paddy Killers." It was on account of their want of safety and adaptation to the right purposes, that a number of managers of Railroads in Massachusetts made personal application to Messrs. Nettleton and Bartlett to try and invent a safe and convenient Dumping Car. The above car is the result of that request. It has been tried for more than half a year, with great satisfaction, and the patent and its expense have been given to the inventors. The car can either be placed upon four or eight wheels with two bodies—each separate and taking its tonage upon the top of the truck. It is no higher than the common car, and it will discharge its lading two feet further from the track, and from its general construction, it will no doubt last much longer. These are certainly great and important advantages and the different railroads think so, as more orders have been given for them than can be supplied at present. There is a pinion on each end of the axle and a rack on each end of the truck.

Stebbins' Patent Faucet.



This is a molasses faucet, invented and manufactured by Mr. Erastus Stebbins of Chicopee, Mass. It is highly valued by those who have used it. A is the end that is inserted in the cask. (It is only seen in section to show the interior arrangement.) The arrows indicate the course of the liquor, when it is open. B is the valve chamber, G is a small plate cast with the faucet and extending across the chamber, leaving a sector opening F. C is the valve rod and E the valve, or it may be called a piston. This piston has its base made of the exact form of G, resting upon it screwed firmly down so as to allow no liquid to pass between them except when the opening of the piston and the opening of the plate G, as represented in the engraving, are exactly above one another. A strip or packing may be employed between the two plates, to make all tight. D is a flange cast on the piston making the exit a channel. C is the piston stem passing up and permanently secured to I, the top valve plate which is a sector form and can only turn round a certain distance, regulated by the side projection H. A strip of packing is placed around the shoulder K, and the cap is a screw nut which is represented to screw all tight down. O is the handle. The screw tightens or loosens the faucet to any degree required, so that there is no fears of leakage.

New Door Weather Strip.

Mr. H. W. Davis, of Groton, Conn. has invented a new strip for the lower part of doors to keep out rain, snow, dust, or cold air. It is not a flap hinge strip, but a vertical projecting one. It is contained in a recess of the bottom door strip, and is attached by springs to the upper part of the recess, and kept level with the bottom of the door when it is open, but when the door is closed, a side cam lever, projecting at the side of the door, is driven in by the door frame and presses down the weather strip close upon the sill. When the door is opened the strip immediately springs up in its recess. Mr. Davis has applied for a patent.

Photography.

In speaking of a new invention in photography, by Belfield & Foucault, of Paris, our neighbor of the Philadelphia Sun says:

"It amuses us to chronicle this, for M. P. Simons, in Chesnut street, opposite the State House, used this very process years since, and has superseded it by a better one, which renders the plate so sensitive that only one to four seconds is necessary to produce an impression."

The fact is that in invention, as everything else the Americans are a *leetle* ahead.

Self-acting Ferry Gate.

We hear that a self-acting Gate to spring across the passage when the ferry boat leaves the dock, is about to be applied in our city at the ferries. If it will operate well, it will be the means of preventing many accidents.

Saw Mill.

Samuel Hopper of Lewistown, Penn., has constructed a sawmill on a small stream gushing out of a mountain, running under a head of water of 120 feet conducted in iron pipes 8 and 6 inches diameter making the pressure of the water in his wheel 53 lbs. to each square inch, the discharge from the percussion wheel only 2 1-4 inches diameter driving the saw 360 strokes per minute with 20 inches sweep. The mill is owned by Hopper & Hamilton of the above named place and in full operation, sawing lumber a little faster than any other mill known to them and perhaps under the highest head of water used in the United States

Music on the Telegraph Wires.

A person recently travelling on a highway, along which telegraph wires were mounted on posts, thus describes what he heard.

"I distinctly heard these musical sounds in the middle of the highway, at least thirty feet from the wires which skirt this road, when there was not a breath of air stirring; and, upon applying my ears to one of the posts supporting the telegraph wires, the vibrations perceptible were of such a character as could not by any possibility be supposed to be produced by atmospheric influence, and, from their analogy to those produced by the passage of electrical currents through conducting substances, I was still further confirmed in the opinion which I have already stated. If I am in error I should like to be set right, and I trust that the subject will attract the attention of some more accurate and philosophical observer.

Who will be the first inventor of an electrical piano forte?"

We cut the above from an exchange, but we know not who to give credit for it. The idea is a good one and we take notice of it to state that such an invention has already been produced. Mr. A. Bain took out a patent last year in London for playing musical instruments by Electro Magnetic apparatus. The London Patent Journal calls it an exceedingly ingenious invention. One part of the invention consists in arranging the apparatus, so that by playing on one instrument, another or several instruments will be actuated to produce similar sounds.

Power Loom Match.

A match was lately tried in Glasgow, Scotland, for a considerable sum of money to decide the relative advantages of two patented improvements on the power loom. A certain number of looms constructed on the two different principles were worked side by side,

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Scientific Associations.

England, France and a number of other European nations have been long famous for Institutions to promote scientific knowledge and encourage discoveries in science and art. All these associations have done good—incalculable good. In England and France those societies are justly held in high esteem and are liberally patronised and sustained. England especially knows that she is indebted to the genius of her men of science, her engineers and mechanics, more than her soldiers and statesmen, for her greatness and glory. At the present moment there are no less than 300 Mechanics Institutions in successful operation in Britain, besides her Atheneums, her Associations of Civil Engineers, and numerous other associations of a like nature.

We regret that our people have paid so little attention to such Institutions and have exhibited so little enthusiasm in their success. We do not exhibit so much public spirit in those things as may justly be expected of us by other nations, considering the generally admitted ingenuity of our people and their general intelligence. It is true that we have some good associations for the dissemination of useful knowledge, but there should be twenty for every one that we now have, and we hope this will yet be the case.

It gives us pleasure to know that our Civil Engineers have made a movement in the right direction. In Boston there is a society of Civil Engineers, and one has been formed in this State, called The New York State Institution of Civil Engineers. This last association was only organized on the 5th of January last, and on the 10th met at Albany and adopted a Constitution. This Institution has already a respectable number of members of no mean scientific attainments. Its object is to elevate the character of the profession by union, periodical meetings, the reading of professional papers, the discussion of scientific subjects and the delivery of lectures, &c.—Good objects truly. "Union is strength,"—"Knowledge is power." We like to take notice of such institutions—we rejoice in their prosperity. It is something to be regretted, that the task to establish and sustain voluntary associations of this kind, is far more difficult and troublesome, than to found and maintain associations for mere amusement, but it is one consolation to the members of such associations, that their objects are far higher and ennobling.

Boiler Explosion,—Doctors Differ and so do Engineers.

Our readers will remember an account in the Scientific American a short time ago about the explosion of a locomotive on the Boston and Providence Railroad, by which the Engineer, Lucius Cummings, lost his life. A committee of eight experienced Engineers were appointed to examine into the causes of the explosion who reported that in their opinion "the explosion took place from overheating the boiler in consequence of a want of water." It seems that the same subject had been referred by the Boston Society of Civil Engineers to a committee, in order that they might investigate the matter, also. On the 6th inst. that Committee reported before the society, and an able one it is, which has since been published in the Boston Traveller.

The Report of this Committee is signed by Wm. P. Parrott, and the conclusion arrived at is totally different from the report of the other committee. It says that the testimony is opposed to the water being low, and the difficulty was local below the surface of the water and was occasioned by the under heating of the lower and middle portion of the tubes, thus giving the contained water a spheroidal form."

It farther says that as the engineer at the moment of explosion put his hand to the steam whistle, that the slight agitation of the water reduced the spheroidal form of water below into highly explosive steam. The ultimate cause is thus held to result from what is called the spheroid property of water and the primary cause of this, is held to be incrustation in the boiler.

Burning Glasses of the Ancients.

Burning Glasses were known to the ancients. In the second Act of the Clouds of Aristophanes, Strepsiades is made to say to Socrates that he has thought of a fine invention not to pay his debts. He says to Socrates:

"Hast thou seen this fine transparent stone with which they kindle fire?

Is it not glass you mean?

True.

Well what wilt thou do with it?

When they give me a summons I will put this glass to the sun and make the whole writing of the summons melt at a distance."

The writing here spoken of must have been made on wax, or did he mean to consume it if made on any material?

The scholiast, M. de la Hire, on Aristophanes, says upon this point, that the glass meant above was round thick glass, made on purpose for burning, and was polished with hot oil rubbed upon it.

Pliny speaks of balls of glass which being exposed to the rays of the sun burned either the clothes or the flesh of the sick person whom they intended to cauterise. Lactantius says that a glass ball held to the sun kindled fire even in the greatest cold. Here is the effect of convex glasses incontestibly proved. But if the ancients knew that they burned, how were they ignorant of their magnifying qualities,—how were they ignorant of this most important use of the burning glasses?—It must have been owing to the false ideas which the ancients had of vision. They believed that it was made of some substance flowing out of the eyes which went to search for objects. Such views of vision must have been the millstone about their necks which prevented them from seeing any relation between the burning glass and our *foci*. Their burning glasses too, were either balls or globes filled with water, and as the focus of the glass sphere is distant from it about one fourth of its diameter, so if their balls were half a foot in diameter, an object would have been brought within one inch and a half to perceive that it was magnified, and beside in looking through these glass balls, they must have seen distant objects only disfigured or confused, which they might have attributed to vision, for the clear augmentation of distant objects requires very large spheres, or small portions of very large spheres, which the moderns now use with such success, and cannot be found by chance. It is not therefore so surprising that the knowledge of the ancients of burning glasses did not carry the Romans much further, but with the splendid intellect of the Greeks, it is wonderful that they did not discover the telescope and apply it to astronomy. But what would Galileo say if he saw Lord Ross's 6 feet diameter reflector? The progress of discovery is gradual, although some tremendous leaps are frequently made.

Advice to our Contemporaries.

In perusing the last number of the "Farmer and Mechanic" (which by the way is a very good agricultural journal) we notice several articles which had formerly appeared in the Scientific American and afterwards copied into other papers, re-copied into that journal and the papers from which they had copied them credited as being the originators of the articles. It is not to find fault with that journal for copying our articles that we make the above statement but it is to advise them to copy *directly* from the Scientific American, which will thereby enable them to present their readers with as late intelligence upon scientific matters and new inventions as their contemporaries can, of whom they have been accustomed to copy, and besides they will be less liable to make errors in the articles copied, many of which appeared in their last number, some of which were ludicrous. Other papers "take particular note."—Advice gratis.

Our contemporaries, the Morgan Herald, Lebanon Packet, &c., will please accept our thanks for their very flattering notices of the Scientific American.

Public Notice.

As a number of letters intended for the Scientific American have been directed to Mr. R. Porter, we would state to our readers that Mr. Porter has had no connection with the Scientific American for the last two years. We have received a number of letters from Mr. Porter intended for us and we publish this notice to correct mistakes of that kind for the future. Another reason is this, as Mr. Porter is engaged in getting up the balloon that is to wing its way to California in four days, some people have written to us desiring information about the passage &c. We would most humbly state, that we have no desire to imitate the Philosopher of *Rasselas*, we rather prefer to keep within the range of exact science than soar amidst its improbabilities. Persons who desire to fly to California need not come to our office for wings.

Wonderful Balloon Ascension and Explosion.

At New Orleans on the 11th ult., M. Victor Verdale, a Frenchman, announced that he would ascend with his balloon at 4 o'clock, not as is customary, in a car, but attached to the balloon by a rope, his "feet to heaven, head to earth," and so ascending, would perform some most wonderful ærial feats, which he did. The afternoon was exceedingly favorable for the daring æronaut, but an accident occurred as he started which placed him in great danger, as the event showed. It seems that when all was ready for the ascent, and the word was given to let go, a rent of some four feet was made in the balloon by getting foul of a post. The gas, of course, commenced escaping, the balloon at the same time rising majestically, and Verdale going through his novel performances, to the great delight of the assembled multitude. The balloon did not rise to a very great height, but went off steadily in a northern direction, the gas all the time making its escape. On arriving over the Ponchartain Railroad, third Municipality, horrible to relate, the balloon exploded, and precipitated him to the earth from a distance of 7000 feet! and what is more astonishing he was not the least injured. He owes his miraculous escape of death from a rose bush in the garden where he landed. The wind being very strong the balloon was in a measure kept up in such a manner as to break the fall.

[This is the greatest feat of ground and lofty tumbling, in the annals of the flights of fancy, or fortune.

Patent Flour Barrel Manufactory.

Messrs. Humphrey and Dodge, two enterprising men. have established a Manufactory with patent Machinery to make flour barrels in Williamstown, Oswego County. The Manufactory is on the head waters of Fish Creek and employs from 50 to 75 men, and turns out easily 400 flour barrels in a day. They are manufactured entirely by machinery, each stave taking, in the process of manufacturing, the same position it occupies in the barrel, when set up; consequently all the barrels must be precisely alike. All the staves are of the same width, and after they have been seasoned, are placed through the finishing machine, where they are planed, joined, creased and champered. The planing gives the barrel a beautiful appearance; the croze is similar to the croze for tight work, and the chime is left thick and strong. The barrel varies in shape from the article now in use, and is supposed to have many advantages on that account. It is about 1½ inches shorter and has an 18 inch head, with the same sized bilge as other barrels. On account of their size, one fifteenth is gained in storage, and at the same time, the barrel being fuller in the quarter, will allow 196 lbs. of flour to be packed looser than in the present shape. The heading is also passed through machinery, which gives it the same accuracy as the staves. Oswego affords the largest market for flour barrels in the world, requiring for its own use at least a million of barrels per annum, beside the ordinary Canadian demand and the demand from other Lake ports on the American side.

The sheriff at Hagerstown, Md. has seized upon the Franklin Railroad, extending from that place to the Pennsylvania line, with all its land appurtenances, and will sell the same on the 10th of April next, by virtue of a writ issued out of the Washington County Court.

Eminent Female Astronomer.

In the year 1831, a gold medal, of the value of 20 ducates, was founded by the King of Denmark, to be awarded to any person who should first discover a telescopic comet; and on the 1st of October, 1841, 10½ o'clock, P. M. such a comet was discovered by Miss Mitchell nearly vertical above Polaris, about five degrees. With characteristic modesty Miss Mitchell declined to allow her father Hon. William Mitchell, to publish her discovery immediately, remarking: "If it is a new comet, our friends, the Bonds of Cambridge, have seen it." The failure to communicate by the mail following the discovery to the Minister of Denmark the fact of the discovery, technically debarred her from the receipt of the medal although it was fully admitted by the judges, Prof. Schumacher, at Altona and Prof. Airy, of Greenwich, that the comet was first seen by Miss Mitchell. Mr. Everett first brought the subject before these judges, who were, however, not authorized to set aside the published conditions of the award. He then, by the advice of the excellent Charge d'Affaires for Denmark, and through the agency of our Minister at Copenhagen, and the Danish Minister of Foreign Affairs, appealed to the king of Denmark who directed that the medal should be conferred upon our learned countrywoman, who is said to be the first lady in the world who was ever thus honored. Miss Mitchell's abilities as an observer have for some years been recognized and used in one of the public works of our country. By way of showing this lady's priority in the discovery, we may mention the fact that on the 3d of October the same comet was first seen at Rome by Father de Vico; on the 7th of October in England by W. R. Dawes; and on the 11th of October at Hamburg by Madame Rumker, the wife of the Director of the Observatory in that city.

Manufacturing in Texas.

The town of New Braunfels says the Austin Democrat, is said to be rapidly improving. It is "beautifully situated on the west bank of the Guadaloupe River, at the foot of the mountains, and possesses water power of the greatest value. Arrangements have been made for the establishment of cotton and woolen factories there within the present year. This will be the first enterprise of the kind undertaken in Texas, and we have no doubt it will prove eminently successful.—Already there are two saw and grist mills in full operation. The surrounding country is rapidly filling up with industrious and respectable settlers, and the recent immigration from Germany is said to be of the best class. We know of no town in the interior of our State whose prospects are more promising."

Lake Superior Copper.

The mining has been very successful at Lake Superior last season. At one mine the lode of copper is between six and seven feet thick and is nearly a continued mass of pure metal, so much so that they are obliged to work the rock away around it, and then cut the masses with a chisel in order to handle them. Some masses weighing from one to two tons have also been taken out and a considerable quantity of silver has also been discovered.

Back Volumes of the Scientific American.

A few more copies of complete sets of vol. 3 of the Scientific American may be had at the office, either bound or in sheets. Price neatly bound $2 75, in sheets suitable for mailing $2. Send in your orders early if you desire them filled for we have but a few more opies left, and the number is growing less every day.

Our London Patrons.

We are happy in being able to inform our English patrons that such arrangements have been completed with the London Patent Office that the Scientific American may hereafter be found there. Messrs. Barlow & Payne are agents at 89 Chancery Lane, and will receive remittances on account of the Scientific American from those who may desire to subscribe.

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Francis Bacon.

This philosopher was the English contemporary of the great Galileo, whose biography we have already published. The name of Bacon is familiar to all, but there are not many who are acquainted particularly with his history. The following memoir, therefore, will be of much interest to many of our readers :—

Francis Bacon was the youngest son of Sir Nicholas Bacon of London, at whose mansion in the Strand, he was born in 1561.

When a boy, he seems to have been about the court, and received some notice from Queen Elizabeth, for his ingeniousness and intelligence. At the age of thirteen he was sent to Trinity College, where he studied with diligence and success. At the age of sixteen, according to Dr. Hawley, his chaplain and biographer, he formed a dislike to the philosophy of Aristotle ; not for anything worthless of the author, but because he thought it " a philosophy only strong for disputations and contentions, but barren of the production of works for the life of man."

On leaving Cambridge he entered Gray's Inn as a student of law, where he was made an ancient on the 21st of November, 1576 ; and, as his attendance was not required in London for some years, he went to France in the suite of Sir Amias Paulett, the British Ambassador to that court. His superior sagacity recommending him to the ambassador he was sent home with an important message to the queen. On his return to France he devoted considerable time to examining the country, and collecting information on the characters and resources of the European princes ; which information he arranged at the age of nineteen, into a work " On the State of Europe." In this early effort of inherent genius we have decided evidence of the depth of penetration, industry in research, and solid judgment, which, in later years, made him great among modern philosophers.

On the death of his father, by which he was left almost wholly unprovided for, he returned to England in 1579, and applied himself to the study of law and philosophy. In both of these departments of study he made great progress, and in June, 1582, he was called to the bar. Some of Bacon's biographers assert that the dry details of legal investigation were unsuited to his lofty genius, and that philosophy being more congenial to his spirit, attracted the largest share of his attention. This might be : and certain it is, that he studied philosophy with more than common assiduity ; for when a student in Gray's Inn, he published a piece entitled " the Greatest Birth of Time," in which his great work the " Organon," is sketched—yet he was by no means either careless or undistinguished as a member of the legal profession. In 1580 he was made a bencher, and at the age of twenty eight, was appointed counsel extraordinary to the queen, besides receiving several other legal appointments in rapid succession.

Although connected with the most powerful family of Elizabeth's reign, Bacon's prospects of state preferment were considerably marred by the opinions entertained of his speculative disposition. His mind was too far advanced for the age he lived in, and his genius too original and gigantic to be appreciated by the men of his time. Hence he was looked on, to a certain extent with an eye of suspicion, and the Cecils, with whom Bacon was nearly related, jealous of the zealous friendship which he had early evinced for their great rival the Earl of Essex, then in the decline, operated rather to hinder than advance the interest of Bacon at the court of Queen Elizabeth. All that the Cecils ever procured for Bacon was the reversion of the office of registrar of the Star Chamber, which however, yielded him no emolument until 20 years afterwards. Essex endeavored to procure for him the office of Solicitor General ; but failing in this he made Bacon a present of Twickenham park, worth £1800.

Bacon's friendship for Essex was of a most sincere character. Notwithstanding the opposition of powerful relations, he attached his elder brother to the interest of this nobleman, and although a coldness subsequently ensued in consequence of a difference of politics, and the line of policy which Essex pursued, when ruin closed around the unfortunate Essex, Bacon still evinced the friendship of former years and by application and entreaty to the queen, strove to avert the fate to which Essex was afterwards subjected. In virtue of his office Bacon had to appear as one of her majesty's counsel against his former friend. Instead, however, of attaching any blame to him for this, it must rather be considered a duty from which he could not escape, and which afforded opportunity of befriending the accused earl. The declarations of treason against the Earl of Essex, which Bacon had to draw up by command of the queen, were so mollified by early friendship as not to suit the purposes of the earl's accuser's, and caused the vindictive Elizabeth to remark, " I see old love is not easily forgotten."

In 1592, Bacon was returned to parliament for the county of Middlesex, and distinguished himself in the debates, by taking the popular side. From this time till the accession of James I. Bacon's pecuniary circumstances were very bad. He was twice arrested for debt, and failed in an attempt to form a matrimonial connexion to relieve his difficulties.—He published several works on political and legal subjects, some of which have been characterized as too much eulogistic of his royal mistress.

Upon the accession of James I., Bacon received the honor of knighthood, and at this time his eloquence and information gave him great weight in the House of Commons From the prudence and boldness with which he represented the oppressions of the royal purveyors, he received the thanks of parliament, and was appointed one of the counsel to the king. With the latter appointment he received a pension of £60 per annum. Notwithstanding the opposition of Cecil, now Earl of Salisbury, and the rivalry of Sir Edward Coke, the attorney general, he continued to rise both in royal favor and the good graces of the nation at large.

In 1605 Bacon published " The Advancement of Learning." Two years afterwards he was appointed solicitor general, which office he fulfilled with distinguished success — His practice in Westminster Hall extended, and he received a large fortune by marriage with the daughter of Benedict Barnham, Esq. a wealthy alderman of London. His parliamentary labors still added to his popularity, without lessening his interests with the crown. Neither public nor professional labors, however, lessened the assiduity with which he pursued the study of philosophy. He published his " Cogitata et Visa," which formed the groundwork of his " Novum Organon Scientiarum," and sent copies to his learned friends for examination and criticism.

(*To be continued.*)

Platina Metal.

This metal was formerly of more value than gold. But the platina mines of Russia have furnished such an abundance of the ore, that it is now next to gold in value. It is a metal, color whitish silvery—the heaviest, the most difficult of fusion, the most ductile, and the most flexible of the known metals, having a specific gravity of 21.5, and capable of being hammered into leaves, or drawn into wires, of extreme tenuity. Its hardness is intermediate between that of copper and capable of being welded at a white heat, either one piece to another, or to a bit of iron or steel. It is not in the least affected by the air or water, and it is not attacked by any of the pure acids ; but is dissolved by chlorine and nitro-muriatic acid.

In beauty, ductility, and indestructibility it is hardly inferior to gold. When a perfectly clean surface of platinum is presented to a mixture of oxygen and hydrogen gas, it has the extraordinary property of causing them to combine, so as to form water, and often with such rapidity as to render the metal red-hot. Platinum was discovered about 1741 ; but it attracted little notice until the mode of purifying it, and rendering it malleable, was discovered by Dr. Wollaston. It is found in the metallic state in Brazil and Peru ; at Antioquia in South America ; and Estremadura in Spain ; and latterly in considerable quantities in the Uralian mountain, and in California. Its appearance, in the rough state in which it is imported, is that of small grains or scales, of a metal lustre, darker than silver, and extremely heavy. In this state it is combined with palladium, rhodium, titanium, iron, gold, or other metals. The particles are seldom larger than a pea, but pieces have been found as large as a hazel nut ; and in 1831, a mass of native metal was discovered in Demicloff's gold mines in Russia, weighing upwards of 20 lbs.

The perfection with which vessels of platinum resist the action of heat and air, of most of the acids, and of sulphur and mercury, renders them peculiarly valuable in many chemical applications ; so that notwithstanding the high value of the metal, which is between four and five time its weight of silver, it is now much employed for crucibles, retorts for the distillation of sulphuric acid, mirrors for reflecting telescopes, by gunsmiths, and others. Its property of being welded either one piece with another, or with iron and steel, admits for many useful applications in the arts. From its scarcity and indestructibility, it has been proposed to use it for coinage ; and we believe coins of the respective values of 3, 6 and 30 silver roubles are now current in Russia.

The Use of Quinine at the West.

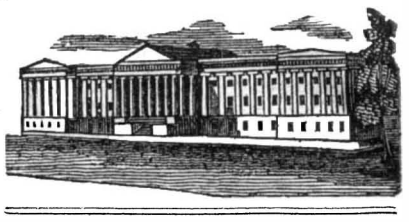
A medical correspondent of the Surgical Journal, writing from the West, says : The immense quantities of quinine sold here would astonish an Eastern dealer in drugs. Five hundred ounces by one druggist in a small village are often disposed of in a few days, and in the larger towns fifteen hundred or two thousand ounces are no uncommon sale by one house from twelve to thirty weeks. In speaking of the fever, or fever and ague, as it is called, for which this medicine is used, the same writter says, that though generally prevalent, and in some seasons almost universal, (as in 1848, when every person, man, woman and child, were down with it,) yet the mortality as compared with fevers at the East, is as one to fifty. When a man is seized with the chills, the physician prescribes sixty grains of quinine in six equal doses, and if he is very restless adds one eighth of a grain of morphine to one of the powder, perhaps the first, and generally in twenty-four hours, the patient is well. But without this invaluable medicine, the patient is often down for weeks and even months.

Lyons in France.

Lyons is the centre of the great silk manufacturing region of France. It has a population of nearly 200,000, swarming through the lofty irregular houses which crowd and darken the narrow, crooked and filthy streets.

The silk manufacture was begun there in 1450. There are no large buildings : like cotton factories, where the work is carried on —everything is done in private houses. The proprietor gives out the work all prepared for weaving, and it is brought home to him when it is finished. A draughtsman, usually a minor partner, is constantly employed in getting up new patterns and it is the special business of another artiste to lay in the piece. There are in operation in and about Lyons, not less than thirty one or two thousand silk looms, or about one to every six or eight of the population. The houses in which the work is carried on, are dark, close, damp and filthy—the living is of the poorest kind, and the whole weaving population is wretchedly depraved, both physically and morally. Of the men who are of a proper age for military service, at least one-half are exempted by weakness, disease or deformity, and the females can boast no superiority whatever over men.

As one winds his way along the streets, he looks in through the open windows upon pieces of glossy silk in the loom, of bright, gay colors, and he sees leaning over the beautiful web, and plying the shuttle amidst the delicate threads, some gaunt and haggard form, whose sunken eye glares mechanically upon the growing robe of some proud Duchess, and whose long, lank fingers go thoughtlessly to their places, as the quick click of the shuttle gives notice of its movement across the piece. For a few sous a day, weary and hungry, and sick, these wretched beings toil on for the decoration of those who can scarcely believe that there is such a thing as misery in the world.



LIST OF PATENTS.

ISSUED FROM THE UNITED STATES PATENT OFFICE,

For the week ending March 20, 1849.

To William T. Barnes, of Buffalo, N. Y. for improvement in apparatus for raising water. Patented March 20, 1849.

To J. T. Farrand. of Port Byron, N. Y., for improvement in apparatus for drawing water from wells. Patented March 20, 1849.

To Freeman F. Merrick of Lynn, Mass. for improvement in tide Water Wheels. Patented March 20, 1849.

To Tilley and W. Flint, of Westford, Mass. for improvement in Steel yards for weighing. Patented March 20, 1849.

To T. J. Wells of New York, City, for improvement in Planing Machines. Patented March 20, 1849.

To R. M. Bouton, of West Troy, N. Y. for Machine for making percussion Caps. Patented March 20, 1849.

To Thomas G. Boon, of Brooklyn, N. Y., for improvement in carding machines. Patented March 20, 1849.

To John N. Dearborn of Boston, Mass. for provement in Cooking Ranges. Patented March 20, 1849.

To John Spangenberg, of Jefferson Parish, La., for improvement in Draining and Blanching Sugars. Patented March 20, 1849. Antedated September 20, 1848.

To Edward Saterlee, of Albany, N. Y. for improvement in processes for burnishing metals. Patented March 20, 1849.

To John P. Hayes, of Boston, Mass., for improvement in portable hot air Furnaces. Patented March 20, 1849.

To Harvey Houghton of Truxton, N. Y. for Bell Telegraph. Patented March 20, 1849.

To Caleb Winegar, of Springport, N. Y. for improvement in Magnetic Telegraphs. Patented March 20, 1849.

To S. W. Aikin. of Spring Hill, Tenn. for improvement in Cotton Cultivators. Patented March 20, 1849.

To Oliver Tiffany, of New York City, for improvement in air heating Furnaces. Patented March 20, 1849.

To E. L. Mathewson, of Hartford, Conn. for self-adjusting Railroad Switch. Patented March 20, 1849.

To Job. Johnson, of Brooklyn, N. Y., for improved Spring Snap Hook. Patented March 20, 1849.

To C. Walker and G. Wilson, of Chester Vt., for improvement in the manufacture of paper veneers. Patented March 20, 1849.

To Julius King, of Bordentown, N. J. for adjustable cut off. Patented March 20, 1849.

To D. H. Chamberlain, of Boston, Mass., for improved sliding wrench. Patented March 20 1849,

To Jos. P. Woodbury, of Boston Mass. for improvement in Planing Machines. Patented March 20, 1849.

To Daniel H. Solliday, of Northern Liberties, Pa. for improvement in Gas Burners. Patented March 20, 1849.

To Israel Jackson, of West Grove, Pa. for improvement in hanging carriage bodies. Patented March 20, 1849.

To Geo. Yerger, of Philadelphia, Pa. for improvement in Surgical Apparatus for fractured or injured Ankles. Patented March 20, 1849.

To Daniel R. Pratt, of Worcester, Mass. for improvement in springs for carriages, &c. Patented March 20, 1849.

To J no. Wright, Rochester, N. Y. for improved Machine for turning a lock in Sheet metal. Patented March 20, 1849.

RE-ISSUES.

To Geo. P. Mason, of Williston, Vt. for improvement in preparing wool and cotton for Carding. Patented Sept. 4, 1847. Re-issued March 20, 1849.

DESIGN.

To S W. Gibbs, of Pattonsburg, Va. for Design for Stoves. Patented March 20, 1849.

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TO CORRESPONDENTS.

"T. J. C. of Md."—We do not exchange with the Courier, therefore we are unable to furnish it, address them again and no doubt they will forward it.

"O. C. D. of Pa." and "H. O. of Ct."—Your drawings have been received and will be examined on Monday.

"J. I C. of Pa."—We cannot account for the delay on the part of the Commissioner. You must hear from him soon, it is high time

"J. S. D. of N. H."—We have examined the drawings of your instruments and find that in many particulars they are new and novel. Their merchantable value will depend altogether upon the measures taken to introduce them. Mathematical instruments are not generally profitable to the inventor, please send us a model.

"H. G. P. of Pa."—Your Printing Telegraph, embodies the same principles employed by Profs. House and Bain We see nothing new in it to encourage you in making application for Letters Patent. The Electro-Magnetic Engine is not new, they have been employed with levers before.

"N. B. W. of Mich."—W. W. Woodworth's patent was granted on the amended specification in 1845 and has 10 years to run as we understand it.

"Wm. P. B. of Geo."—Without a general description of the "Propelling Power" you refer to, we shall be unable to give our opinion of its probable value. If it will accomplish well the object for which it is intended, it will do; a practical trial will settle the point.

"J. A. S. of Ohio."—The drawings of your mortising machine, are not in our possession. There seems to be some mistake in the matter.

"C. H. of S. C."—Your letter and fine list of subscribers duly reached us, thank you for it. We cannot give you such information as you desire, having no knowledge of such a person as you name.

"S. Z. H. of N. H."—No person could have inferred justly from our language in reference to the "floating of iron" whether we knew or not that iron would float. Your explanation of the needle floating in water is different from that of Dalton,—the fact of it being able to float is known to every school boy.

"T. S. J. of Ohio."—Paddle wheels constructed upon your plan are now in use, to a limited extent. They answer a very good purpose, but hitherto builders have refused to employ them fearing that they would be more liable to get out of order, than the kinds generally in use. We should like to hear the result of your further experiments.

"B. J. C. J. and M. C. of Mass."—Your funds have been received, we shall proceed with your business as fast as possible.

"D. M. L. of Canada."—We are not in possession of the information you desire, we would gladly furnish it if possible. Mr. Law resides in Wilmington, N. C. You might learn the full particulars, in regard to his Stave Dressing Machine by addressing him a letter.

"T. D. of Oneida. Co. N. Y."—We could furnish you with the receipt but do not think it reasonable to do so. You can get it from a dyer by paying a reasonable sum, as every man should, for it requires both time and money to gain such information. You are mistaken about the oxgall, and another ingredient that you have mentioned. Club together and pay a reasonable sum to Mr. Lean, dyer, and you will get it, or to Mr. Hollister.

"J. H. L. of Pa."—The diving bell is moved from place to place by a chain from above. It is not divided as yours is, but the communicating tube and the way of expelling the foul air is the same in both cases. A patent could be secured on its combined chambers. The Patent Office fee is $30. You would have to send us a model.

"J. H. of Ms."—Your caveat has been acknowledged at Washington and we are proceeding with your papers for the other application.

"P. S. of N. Y." "H. W. D. of Ct." "H. W. C. of Mass." "R. S. T. of R I." and "N. P. S. and A. R. D. of Va"—Your specifications, drawings and models have all been forwarded to the Patent Office.

"C. D. and T. L. V. of Pa."—We are under the impression that you can procure a patent for your machine. The drawing, however, is so indefinite that in order to decide more fully we shall require a model; you can send one by express or any convenient mode of conveyance.

"A. B. of Ct." "I. C. and J. T. of N. Y." and "E. B. of Mass."—We have sent your specifications for re-signing and we hope to receive them from you again as soon as possible.

"E J. of Mass."—Please forward the amount of Patent fee $30, and we will proceed with your business without delay.

"R. C of Mass."—Your model has been received, but has not yet been examined.

"G. W. L. of Pa." "W. H. D. of Mass." "J. C. M. of Mich." and "J. W. of N. O."—The drawings of your machines are all executed and in a few days the specifications will be prepared and forwarded to you for signature.

"W M. of Ala."—We shall attend to your business at the earliest possible moment, and at the same time we shall endeavour to furnish Mr. B— the information he desires.

"E. H. of Mass."—We sent your caveat for signatures several days ago. Why do you not return it?

"D. W. of Me."—The package was received, and the papers have been forwarded to the Patent Office

"H. T. of Mass."—Your plan of a Lock is very novel and ingenious, sufficiently so to warrant an application for letters patent.—Your best course would be to employ a locksmith in Worcester to build one for experimental purposes. It would be attended with much less expense and trouble than in this city. We shall preserve the pattern for future reference.

Will the Maine Farmer please inform us if convenient of the residence of W. C. Bates and S. T. Tucker. We have letters for them concerning their improvements in Wool Spinning noticed in No. 14 Vol. 4, Scientific American.

We have several drawings of new inventions for examination, and shall attend to them as early as possible, just now we are very much hurried.

We have received an able Communication from H. Ancrum, of Ashly, Pike Co. Missouri, on a National Scheme of Sheep Husbandry, which will appear next week.

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The subscribers also make to order larger sized Planers, to work by power. Also, Lathes, Drilling Machines, Mill Gearing, Shafting, Pulleys, &c. Orders left at T. J. Wood's Tool Store, or addressed to the subscribers at Union Works, Meriden, Ct. will receive prompt attention.

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N.B. All work done by us is warranted to give satisfaction. m31 6t*

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By the arrangement of the knives this machine preserves almost entire the grain of the timber, (which is a great consideration in the wear of shingles,) jointing them, and producing near one-third more from a given quantity of time, than can be got by any other process now used, and every shingle in perfection—without liability to clip, shorten or mar them in any way by checks or shakes, and leaving every one as sound as if riven. It has also the advantage of greater dispatch, as two shingles are produced by each descending motion of the gate to which the knives are attached. The HIGHEST PREMIUM was obtained by this machine at its exhibition last fall, at the National Fair held in the city of New York.

Persons desiring to purchase rights for Pennsylvania, New Jersey and Massachusetts, address

JAMES D. JOHNSON, Easton, Conn., or
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For any of the States not above mentioned, address JOHN H. PETERS, Kent, Ct. m31 2t*

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Any business connected with the Patent office may be done by letter through the Scientific American office with the same facility and certainty as though the inventor applied in person. Our prices too (another important consideration to inventors) are but about half as much as the charges of most agents as the amount of business which we do, and that in connection with the publication of the Scientific American renders to us superior advantage over all other agents.

Having been often complimented by those who have entrusted their business in our care, we here repeat what very many have said. "The best Patent Agency in the United States is at the Scientific American office"

All models, drawings or communications that are sent to the Scientific American office for inspection are deposited from the eyes of the public until the necessary application for securing the invention has been made.

The best of artists are constantly employed to make drawings from models and our corps of specification writers are composed of gentlemen formerly connected with the Patent office at Washington as Examiners.

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The Weekly Sun for 1849, besides being the best and cheapest Family Paper in the world, will be enriched by a series of ORIGINAL PRIZE STORIES written expressly for this paper, and for which Four Prizes of $250 have been offered by the Proprietors.

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THAT will cause butter to come from milk in three to four minutes, for sale at $3, $4 and $5 each, at the Agricultural Warehouse of
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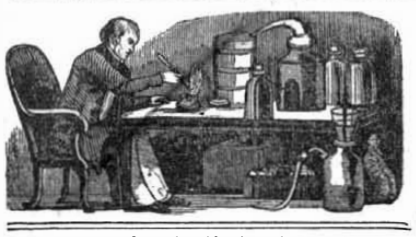


For the Scientific American.

Poisonous Acius.—Oxalic Acid.

This acid is characterized by white crystals in four sided prisms. It is very soluble in water, very sour and very poisonous. This acid looks something like epsom salts and serious results have arisen by mistaking the one for the other. Oxalic acid is decomposed at a high heat, into *water, carbonic and formic acids.* It can at once be known from epsom salts by being exceedingly sour in taste, while the salts are very bitter. No person need mistake the two. Oxalic acid volatizes when heated on a platinum foil, while epsom salts only lose their water of crystalization.

If oxalic acid is weak, or has been suspected to have produced death in any person, one test is the nitrate of silver, which produces a precipitate in a solution that contains 1-4000 part by weight of oxalic acid. This oxalate of silver is a fulminating powder, and when ignited, it leaves no carbonaceous residue.—Sulphate of lime also produces a white precipitate with oxalic acid solution. Sulphate of copper produces a greenish white precipitate in oxalic acid solution, which is not easily soluble in hydrochloric acid. Oxalic acid is the best substance known for erasing iron spots on linen. No other acids equal it. It is also used by those who bleach straw and leghorn hats to clear up their color and take out the iron stains. The straw hats are dried out of it in the sun and it does not seem to injure their texture so readily as some other acids. Some housekeepers use oxalic acid to clean their brass ornaments, such as stair rods, door knobs and many other things. There is therefore a danger of children being poisoned with it, as it very often happens that what some are forbid to do—that they are sure to do. The antidotes for this poison are magnesia, and chalk. Simple remedies and easily administered.

Sulphuric acid is also sometimes used in families. It cannot strictly be said to be poisonous as it may be used in small quantities diluted in water, and no evil effects produced. It will destroy life, however, if taken into the stomach in a strong state. A simple antidote is saleratus, or any alkali—or chalk or magnesia. We would prefer the latter as an antidote. We have known some cases, where urine was successfully (because convenient) administered.

Nitric Acid is also a poison, but we never knew of any cases of poisoning by it. It is a dangerous acid to use. Its fumes are poisonous, and it should be used with great caution in all departments where it may be necessary to employ it. It stains the skin yellow and makes white silk a beautiful golden color.—It is injurious to the texture of woolen cloth and is used to produce the orange colors on blue table spreads. Ammonia or potash are the best antidotes.

Light and the Eye.

On closing the eyes, after having looked steadfastly at a sheet of white paper held in the sun for about a half a minute, and covering them without pressure to exclude extraneous light, the figure of the paper remains invisible for some time. At first it is generally white and then gradually changes through the colors of the spectrum. All the colors are seldom seen at the same trial; and it rarely happens, when one or more are missed that they afterwards appear. Thus when the change is from green to red, yellow or orange are seldom seen. The change from white generally commences with a light indigo or blue, and terminates with red or some compound of it, but sometimes with a deep blue or violet. The colors are generally seen at the edges of the figure first, though this is not always the case; and when they once appear, they often remain mixed up with those that succeed. Many curious modifications and confused mixtures of colors will be perceived at times; but it seldom happens that the colors develope themselves in the first instance, contrary to their order, in the spectrum, although when the last has appeared, they occur in various ways.

Superior Red Ink.

Take a small quantity of the best carmine, about the size of a pea, and put it into a small phial with a little spirit of hartshorn to dissolve it. When dissolved put as much pure water in it as will give it the desired shade, and then let the bottle not be corked for some time, to allow the hartshorn to evaporate, when it is ready for use. This ink is very permanent and does not change its color.

The common red ink is made by boiling brazil wood, taking the strong solution and adding to it a small quantity of dissolved alum. It looks all the better to have a few drops of the muriate of tin added to the liquor—not too much however, or it will injure the pen. A quill is the only pen to use red ink with. If a small quantity of sumac and quercitron bark be boiled along with the brazil wood it makes the ink still better—of a scarlet shade. Brazil wood itself is rather on the blue shade. For common purposes, we advise those who use much red ink, and make it themselves—not to forget the sumac at least, but a very small quantity will suffice. The liquor should be strained through a cloth as soon as it is boiled, and when cold bottled and kept well closed in the bottle.

Blue Writing Ink.

Four ounces sulphate of iron, 2½ drachms of sulphuric acid, 1 ounce or q. s. nitric acid, 6 ounces ferrocyanide of potassium; water q. s. Dissolve the sulphate of iron in one pint of water, then add the sulphuric acid, and heat the solution to boiling, then pour in the nitric acid in small quantities at a time, continuing the boiling until the iron is peroxidized. Dissolve the ferrocyanide of potassium in two pints of water, and add the former solution, when cold, to this. Collect the precipitate that will be formed on a filter, and carefully wash it with distilled water, until the blue precipitate begins to dissolve in the water. It will now be found to be soluble in pure water, although insoluble if any other salt be present. Rub what remains in a mortar with distilled water until a clear solution is obtained of the required intensity of color. A little oxalic acid is sometimes added, but this is not necessary, if the above instructions be carefully followed, as the precipitate will be perfectly and permanently soluble in pure water.

Fire Arms Differently Charged.

Balls which fit accurately the bore of a piece, have the greatest effect, as they do not come out so readily but give time for the greater quantity of powder to ignite.

When the powder is rammed violently down, its effect is no greater, but somewhat less than when barely pressed down with the ball upon it.

Gunpowder around a ball diminishes its effect, as it expands in all directions, and when it is upon the top of a ball, it must in some measure act counter to its progress.

By taking a ball and putting a little powder under and considerable before it, its effects may be almost nullified, and yet there will be considerable noise when the gun is discharged.

To Stop Horses Suddenly.

It is said that horses which run away will stop at once, if there is any thing thrown over their heads, which hinders their seeing. If therefore there can be a screen fixed about the head stall, say of india rubber cloth, which can be drawn down by a cord over the horse's eyes when they run away, they will thus at once be stopped. Such an arrangement connected with two small cords to the seat of the carriage to be pulled from within, might be a great safeguard against horses running away, of which there are many good ones that seem to have a passion for it. J. W.

To Prevent a Bruise from Becoming Discolored.

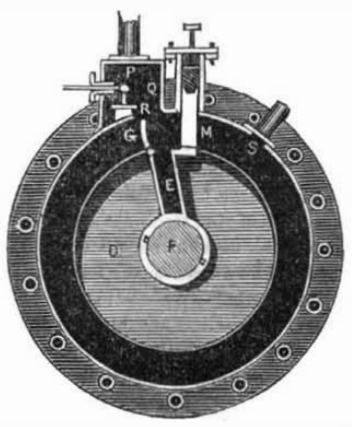
It is said that blood can be prevented from settling in a bruise, by applying to the place a cloth wrung out of very warm water, and renewing it until the pain ceases. The moisture and heat liquify the blood, and send it back to the proper channels, which, by neglect, or the use of cold applications, would be coagulated, and fixed in green and black blotches directly under the skin.

History of the Rotary Engine.

Prepared expressly for the Scientific American.

EVANS' ROTARY ENGINE.

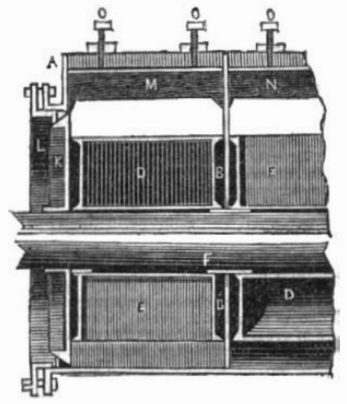
FIG. 54.



This engine was invented by an English engineer named John Evans, of Wallingford, in 1828. It shows how liable practical men are to fall into error as well as mere theorists, and we will never be surprised at this after James Watt, so gifted and eminently scientific, fell into like errors.

This engine is composed of a long cylinder A A, laid horizontally, and divided into two equal parts by a disk, or broad flanch B, in the interior; in each department is a drum D, composed of two concentric cylinders, cast in one piece, and a channel E, is formed, extending the length of the drum, and reaching from the larger to smaller cylinder, the object of which is stated to be to obtain greater surface. Through these drums passes an axis F, with small projecting feathers, fitted into corresponding grooves in the interior cylinder of the drum, which thus comes round the axis. Attached to the periphery of the drum, by a hinge, is a flap or piston G, which is of somewhat greater diameter than the channel H, left between the drum and the exterior cylinder A, and placed immediately over the cleft or channel E. The drums are pressed against the disk B, by the end plates K, of the same diameter as the cylinder A, and having their upper surface bevelled round the rim to receive the packing, which is covered by a flat hoop, pressed down by a short cylinder L, by screws screwing into the flanch of A, so that no steam can escape between the drum and the disk B, or the end plates K. The drums must be so placed on the shaft F, that when the cleft E,

FIG. 55.



of one drum is on the highest part of the shaft, that on the other drum shall be on the lowest part of the shaft. Along the upper side of the cylinder A, is fixed a groove, through which descends a stout shutter, on to the drum or abutment M, faced with brass, and having above it a packing of hemp N, covered with a plate of metal, pressed down by the screws O. The steam is admitted by a steam pipe P, into the steam box Q, (of which there are two, one to each drum,) furnished with a slide valve R, regulated by an eccentric on the axis; S is the eduction pipe. The steam being admitted into one compartment, acts against the shutter M, and the piston G, and causes the drum and shaft to revolve; when, by the revolution of the drum, the piston of the other drum is carried past the aperture in the steam box G, the steam is admitted to it, and shut off from the first compartment, and the revolution of the shaft is thus continued, by the admission of steam into each compartment alternately, during half a revolution. The eduction pipe may communicate either with the condenser or the atmosphere.

The steam acting as proposed by Mr. Evans can have no tendency to force the piston either way.

Curious mode of Grafting the Grape Vine.

A gentleman in the neighborhood of Oporto, split a vine shoot (white grapes,) very carefully down the middle, cutting the bud in half, and then split a corresponding shoot on a black vine, and united them as in common grafting, and, after many experiments, succeeded in making the graft grow, and the produce of the vine was white and black fruit on the same bunch.

Repulsion.—Steel and Water.

Dr. Dalton, in his philosophical experiments, says, "if a blade of a well polished knife be dipped into a basin of cold water, the particles of each of those two bodies do not seem to come in contact with each other; for when the blade is taken out, the water slides off, leaving the blade quite dry, as if it had previously been smeared with any greasy substance.

In the same way, if a common sewing needle be laid horizontally on a glass of water, it will not sink, but form a kind of trench on the surface on which it lies and floats about. This proceeds from the little attraction which exists between the cold water and the polished steel. It is necessary that both the knife, in the last experiment, and also the needle, should be dry and clean; otherwise, the effect will not be produced.

LITERARY NOTICES.

Holden's Dollar Magazine for April, has made its appearance. It contains a portrait of Washington Irving and his "Sunny Side" on the banks of the Hudson. A view on the river Stour in England, and the scene of an encampment in the Sacramento valley, which we imagine will be verified to the sorrow of some of the participants; the artist has executed faithfully our idea of being far away from "Home Sweet Home." Holden is cheap at a dollar.

Neal's Gazette, published in Philadelphia, has been considerably enlarged and makes a beautiful appearance. It is an excellent paper.

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